

Title (en)

Rare-earth barium copper oxide superconducting materials.

Title (de)

Oxid von seltenen Erden, Barium und Kupfer als supraleitende Materialien.

Title (fr)

Oxyde de terre rare, baryum et cuivre comme matériaux supraconducteurs.

Publication

EP 0398503 A2 19901122 (EN)

Application

EP 90304155 A 19900418

Priority

NZ 22882089 A 19890419

Abstract (en)

The invention comprises metal oxide materials which exhibit bulk superconductivity at a T_c in excess of 85K in some cases, within the formula $R_{1-x}Ba_2-yA_x+yCuO_{8-\delta}$ where: $0 \leq x < 0.3$ and $0 \leq y < 0.3$ provided that $x+y \neq 0$, $-0.25 < \delta < 0.25$ $3.9 < a < 4.1$ R is Y, La, Nd, Sm, Eu, Gd, Ho, Er, Tm or Yb or any combination thereof, Ba is Ba or Ba partially substituted by either or both of Sr and La, A is most preferably Ca but may be Li, Na, K, Rb or Cs, or any combination thereof, Cu is Cu or Cu partially substituted by Ag, Au, Hg, Tl, Bi, Pb, Sb or Ga, or any Periodic Table transition metal element or Group 3A, 4A or 5A metal or any combination thereof, and O is O or O partially substituted by N, P, S, Se, or F or any combination thereof. Novel processes for preparation of the materials comprising reacting precursor materials for between 1 and 300 hours at a temperature T and oxygen partial pressure P_{O_2} satisfying the equation $T < 1220 - 180L + 21L^2$ where $L = \log_{10} P_{O_2}$ are also disclosed and claimed. The preparation reaction may be carried out as a solid state or liquid flux reaction of precursor materials in stoichiometric proportions and an alkali metal flux, catalyst or reaction rate enhancer comprising an oxide, chloride, nitrate, hydroxide or carbonate of the alkali may be employed.

IPC 1-7

C01G 3/00; C04B 35/00

IPC 8 full level

C04B 35/00 (2006.01); **C01B 13/18** (2006.01); **C01G 1/00** (2006.01); **C01G 3/00** (2006.01); **C04B 35/45** (2006.01); **H01B 12/00** (2006.01); **H01B 13/00** (2006.01); **H01L 39/12** (2006.01); **H01L 39/24** (2006.01)

CPC (source: EP)

C01B 13/185 (2013.01); **C01G 3/006** (2013.01); **C04B 35/4504** (2013.01); **H10N 60/857** (2023.02); **C01P 2002/72** (2013.01); **C01P 2002/76** (2013.01); **C01P 2002/77** (2013.01); **C01P 2006/36** (2013.01)

Cited by

CN102219479A; US5550105A; CN106835283A; CN106835282A; WO9402947A1

Designated contracting state (EPC)

CH DE FR GB LI NL SE

DOCDB simple family (publication)

EP 0394015 A2 19901024; EP 0394015 A3 19910925; DE 69025644 D1 19960411; DE 69025644 T2 19961024; EP 0398503 A2 19901122; EP 0398503 A3 19910925; EP 0398503 B1 19960306; JP H03164427 A 19910716; JP H0365510 A 19910320; NZ 228820 A 19920728

DOCDB simple family (application)

EP 90304156 A 19900418; DE 69025644 T 19900418; EP 90304155 A 19900418; JP 10436890 A 19900419; JP 10436990 A 19900419; NZ 22882089 A 19890419